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TI - GALACTANASE S-39 AND BACILLUS SP S39 CAPABLE OF
PRODUCING THE SAME
IN - AKIBA AKIHIKO; HORIKOSHI KOKI; TSUMURA KAZUNOBU
PA - FUJI OIL CO LTD
IC - C12N9/42 ; C12N1/20 ; C12P19/14

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TI - Galactanase S-39 produced by Bacillus sp. S-39 - acts on soybean
fibre to give Galacto-oligosaccharide
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- C12N1/20 C12R1/07
IC - C12N1/20 ; C12N9/42 ; C12P19/14
AB - J09121853 Galactanase S-39 acts on soybean fibre to give
galacto-oligosaccharide without forming monosaccharide,
galactose; acts on substrate, beta-1,4-galactan without acting on
beta-1,3-galactan; at pH 3-12, at temperature 20-65 degrees C,
has optimal pH 4.0, is stable at pH 4-10.5, and stable at less than 6
degrees C, and has molecular weight of about 36,000.
- Galactanase producing Bacillus sp. S-39 (FERM P-11230) having
following bacteriological properties (1) negative in denitrification
reaction, (2) positive in gas generation from glucose, (3) negative in
Koser medium in utilisation of citric acid, (4) grows in pH range of
6.8 or higher, (5) negative in anaerobic culture, (6) positive in VP
test, (7) positive in casein hydrolysis, (8) negative in reduction of
nitrate, and (9) no growth under 5-10% NaCl concentration.
- Bacillus sp. S-39 is aerobically cultured in nutrient media and
produced galacto-oligosaccharide can be isolated and purified by
conventional methods.
- ADVANTAGE - Selective production of galacto-oligosaccharide
without forming galactose.
- Bacillus sp. S-39 was inoculated in a liquid medium and cultured
with shaking at 37 degrees C for 40 days. The cultured mixture was

centrifuged to give supernatant containing galactanase S-39 and purified with HPLC. The resultant galactanase S39 was caused to react on a substrate at pH4.0 for 6 hours to give galacto-oligosaccharides with a yield of 46%. HPLC analysis of the product showed galactobiose 28%, galactotriose 54%, galactotetraose 15%, and galactopentaose 3% without galactose. (Dwg.1/5)

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TI - GALACTANASE S-39 AND BACILLUS SP S39 CAPABLE OF PRODUCING THE SAME

AB - PROBLEM TO BE SOLVED: To obtain a new galactanase virtually incapable of producing monosaccharides (e.g. galactose) even after hydrolyzing dietary fibers and capable of producing oligosaccharides (e.g. galactooligosaccharide) in high yield, and to obtain a new microorganism capable of producing the above galactanase.

- SOLUTION: This new galactanase, galactanase S39, has the following enzymatic characteristics: (a) action: acting on soybean fibers to produce galactooligosaccharide but nearly not isolating monosaccharides (e.g. galactose); (b) substrate specificity: acting on β -1,4 galactan but not acting on β -1,3 galactan; (c) acting pH: 3-12; and (d) acting temperature: 20-65 deg.C. The new microorganism, Bacillus sp. S39 (FERM P-11230), is capable of producing the above new galactanase and has the following bacterial characteristics; (a) physiological characteristics etc.: (1) negative in denitrification; (2) positive in gas generation from glucose; and (3) viable pH range: \geq pH 6.8; and (b) negative in anaerobic growability.

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